STANDARD 1: FUNDAMENTAL OPERATIONS AND CONCEPTS

Students understand the operations and function of technology systems and are proficient in the use of technology.

READINESS (Kindergarten)

- **1T-R1. Communicate about basic technology components using developmentally appropriate and accurate terminology**

  PO 1. Use basic vocabulary related to the use of technology (e.g., mouse, keyboard, monitor, toolbar, menu, window, folder, icon, spreadsheet, word processor, cassette player, CD player versus DVD versus video tape, video camera)

  PO 2. Identify the components of a computer (e.g., mouse, keyboard, monitor, CPU, printer)

- **1T-R2. Use input devices and output devices successfully to operate computers, VCRs, audio tapes, and other technologies**

  See:Workplace Skills (7WP-R1)

  PO 1. Demonstrate start up and shut down procedures of basic technology components (e.g., computers, tape recorders, cassette players, VCRs)

  PO 2. Use devices to complete a task (e.g., mouse, keyboard, printer, remote control, microphone)

STANDARD 2: SOCIAL, ETHICAL AND HUMAN ISSUES

Students understand the social, ethical and human issues related to using technology in their daily lives and demonstrate responsible use of technology systems, information and software.

READINESS (Kindergarten)

- **2T-R1. Work cooperatively and collaboratively when using technology in the classroom**

  See: Arts {Theatre} (1AT-R5)

  PO 1. Demonstrate respect for other students while using technology (e.g., take turns, share resources)

  PO 2. Demonstrate appropriate behavior (e.g., use only your documents and folders)

- **2T-R2. Practice responsible use of technological devices**

  See: Arts {Visual} (1AV-R6) and Social Studies (2SS-R1)

  PO 1. Operate equipment to ensure equipment is unharmed (e.g., do not bang on keys; no food or objects near equipment; care for disks and CD-ROM; use proper shut down procedures)

  (*See Technology IT-R2, PO1)*

  PO 2. Recognize that damaging school equipment is destroying public property

  PO 3. Recognize that changing someone's work without permission is unacceptable

STANDARD 3: TECHNOLOGY PRODUCTIVITY TOOLS

Students use technology tools to enhance learning, to increase productivity and creativity and to construct technology-enhanced models, prepare publications and produce other creative works.

READINESS (Kindergarten)

- **3T-R1. Use technology drawing tools for communicating the illustrating**

  See: Language Arts (R-R5, PO1 and W-R3, PO1)

  PO 1. Using a drawing program, create a picture story with support from teacher, family members or student partners

  PO 2. Using a drawing program, add name and letters to illustrations

STANDARD 4: TECHNOLOGY COMMUNICATIONS TOOLS

Building on productivity tools, students will collaborate, publish, and interact with peers, experts and other audiences using telecommunications and media.

READINESS (Kindergarten)

No concepts identified for this level

STANDARD 5: TECHNOLOGY RESEARCH TOOLS

Students will utilize technology-based research tools to locate and collect information pertinent to the task as well as evaluate and analyze information from a variety of sources.

READINESS (Kindergarten)

No concepts identified for this level

STANDARD 6: TECHNOLOGY AS A TOOL FOR PROBLEM SOLVING AND DECISION-MAKING

Students use technology to make and support decisions in the process of solving real-world problems.

See: Science 3SC in its entirety and Workplace Skills 3WP in its entirety

READINESS (Kindergarten)

No concepts identified for this level

STANDARD 1: FUNDAMENTAL OPERATIONS AND CONCEPTS

Students understand the operations and function of technology systems and are proficient in the use of technology.

FOUNDATIONS (Grades 1-3)

- **1T-F1. Communicate about internal technology operations using developmentally appropriate and accurate terminology**

  See:Language Arts (VP-F), Science (1SC-F4, PO1-2) and Workplace Skills (1WP-F5)

  PO 1. Apply basic vocabulary related to the internal operations of the technology (e.g., disks, drives, RAM, ROM, CD-ROM port, CD-ROM and DVD)

- **1T-F2. Demonstrate functional operation of technology components**

  See: Comprehensive Health {Physical Activities} (1PA-F1) and Workplace Skills (7WP-F2)

  PO 1. Demonstrate correct ergonomic use of technology (e.g., correct posture, position of hands and feet, proper height of keyboard, proper lifting and moving of equipment)

  PO 2. Use multimedia resources (e.g., interactive books, educational software, elementary multimedia encyclopedias)

  PO 3. Access information sources (e.g., CD-ROMs, encyclopedias, pre-bookmarked Internet sites)

STANDARD 1: FUNDAMENTAL OPERATIONS AND CONCEPTS (continued)

Students understand the operations and function of technology systems and are proficient in the use of technology.

FOUNDATIONS (Grades 1-3)

- **1T-F2. Demonstrate functional operation of technology components**

  PO 4. Communicate electronically, under teacher supervision (e.g., video, audio, e-mail) *(For Internet safety protocols see Technology 2T-F2, PO1)*

  1T-F3. Use developmentally appropriate technology resources to access information and communicate electronically

  See:Language Arts (VP-F), Mathematics (1M-F7) and Workplace Skills (7WP-F1)

  PO 1. Operate keyboard and other common input and output devices (including adaptive devices for special needs when necessary)
  a) Use device in response to software (e.g., point and click, arrow and enter/return keys)
  b) Use keyboard effectively (e.g., knows locations and function of keys, begins touch-typing strategies by grade three)

  PO 2. Retrieve and save information (e.g., text documents, digital photos, music, video)

  PO 3. Print documents, text or image

STANDARD 2: SOCIAL, ETHICAL AND HUMAN ISSUES

Students understand the social, ethical and human issues related to using technology in their daily lives and demonstrate responsible use of technology systems, information and software.

FOUNDATIONS (Grades 1-3)

- **2T-F1. Demonstrate respect for other students while using technology**

  See: Social Studies (2SS-F3, PO1-3)

  PO 1. Describe and practice respect for other students while using technology (e.g., do not duplicate software or documents without authorization; report behaviors that threaten the ability of others to legitimately use resources; allow peers to work uninterrupted; do not erase or damage files, documents or projects)

- **2T-F2. Practice responsible use of software**

  PO 1. Use equipment appropriately (e.g., use for assignments and school work versus personal pleasure; do not send threats)

  PO 2. Describe and practice legal and ethical behaviors when using technology (e.g., do not copy, alter, delete or move another person's work)

  PO 3. Demonstrate and practice safe and correct security procedures (e.g., protect password)

STANDARD 2: SOCIAL, ETHICAL AND HUMAN ISSUES (continued)

Students understand the social, ethical and human issues related to using technology in their daily lives and demonstrate responsible use of technology systems, information and software.

FOUNDATIONS (Grades 1-3)

- **2T-F3. Discuss common uses of technology in daily life and the advantages and disadvantages those uses provide**

  See: Comprehensive Health (4CH-F2), Science (3SC-F4), Social Studies (4SS-F2, PO4)

  PO 1. Describe three-to-five uses of technology in daily life

  PO 2. Discuss the positive and negative impact of technologies such as television and computers on daily life (e.g., negative health impact; safe Internet use, such as knowing what information is safe to share when using e-mail, "talking" to strangers)

STANDARD 3: TECHNOLOGY PRODUCTIVITY TOOLS

Students use technology tools to enhance learning, to increase productivity and creativity, and to construct technology-enhanced models, prepare publications and produce other creative works.

FOUNDATIONS (Grades 1-3)

- **3T-F1. Use prescribed technology writing or drawing tools for communicating and illustrating**

  See: Language Arts (W-F1, PO5), Science (6SC-F7) and Social Studies (1SS-F1)

  PO 1. Use word processing to create a document and, where developmentally appropriate, use editing tools

  PO 2. Insert a graphic into a word processing document

- **3T-F2. Use prescribed technology tools for data collection and basic analysis**

  See:Mathematics 2M-F1 and 2M-F2)

  PO 1. Use a spreadsheet or database application to perform simple data analysis (e.g., comparisons, collections, graphs and charts)

STANDARD 3: TECHNOLOGY PRODUCTIVITY TOOLS
(continued)

Students use technology tools to enhance learning, to increase productivity and creativity, and to construct technology-enhanced models, prepare publications and produce other creative works.

FOUNDATIONS (Grades 1-3)

- **3T-F3. Use prescribed technology tools for publishing and presenting information**

  PO 1. Use a pre-designed template or stationery to publish a document (e.g., newsletter, slide show, greeting card, certificate)

  PO 2. Create a multimedia product with support from teachers, family or student partners (e.g., slide show, hyperstack, video)

STANDARD 4: TECHNOLOGY COMMUNICATIONS TOOLS

Building on productivity tools, students will collaborate, publish, and interact with peers, experts and other audiences using telecommunications and media.

FOUNDATIONS (Grades 1-3)

- **4T-F1. Communicate with others using telecommunications, with support from teachers, family members or student partners**

  See: Language Arts (W-F4)

  PO 1. Communicate information electronically with support from teachers, family members or student partners (e.g., e-mail, video-conferencing, Web page)

- **4T-F2. Use technology tools for individual and collaborative communication activities to share products with audiences inside and outside the classroom**

  See: Language Arts (W-F1)

  PO 1. Plan, design, and present an academic product to classroom or community (e.g., slide show, progressive story, drawings, story illustrations, video production, digital images)

STANDARD 5: TECHNOLOGY RESEARCH TOOLS

Students utilize technology-based research tools to locate and collect information pertinent to the task, as well as evaluate and analyze information from a variety of sources.

FOUNDATIONS (Grades 1-3)

- **5T-F1. Recognize electronic information sources**

  See: Arts {Theatre} (2AT-F1), Language Arts (W-F5) and Workplace Skills (7WP-E2)

  PO 1. Identify potential sources of information about a topic (e.g., video or cassette tapes, Web pages, CD-ROMs)

  PO 2. Locate information in a resource selected by the teacher (e.g., Web page, CD-ROM)

STANDARD 6: TECHNOLOGY AS A TOOL FOR PROBLEM SOLVING AND DECISION-MAKING

Students use technology to make and support decisions in the process of solving real world problems.

FOUNDATIONS (Grades 1-3)

- **6T-F1. Use technology resources for problem solving, self-directed learning and extended learning activities**

  PO 1. Based on a class-defined problem, use technology to:

  a) collect data

  b) interpret data

  c) express a solution to the problem

  PO 2. Based on a problem selected by the student, use technology to:

  a) collect data

  b) interpret data

  c) express a solution to the problem

STANDARD 1: FUNDAMENTAL OPERATIONS AND CONCEPTS

Students understand the operations and function of technology systems and are proficient in the use of technology.

ESSENTIALS (Grades 4-8)

- **1T-E1. Communicate about technology using developmentally appropriate and accurate terminology**

  See: Language Arts (VP-E)

  PO 1. Use basic vocabulary related to technology (e.g., FireWire, USB, parallel, serial, scanning, digitizing, OCR)

  PO 2. Use basic vocabulary related to systems (e.g., network, infrastructure, Internet, Intranet, LAN, WAN, Ethernet, firewall, server, TCP-IP)

- **1T-E2. Demonstrate increasingly sophisticated operation of technology components**

  See: Arts {Music} (1AM-E9-10), Mathematics (1M-E6, 2M-E1), Science (1SC-E2) and Workplace Skills (7WP-E1)

  PO 1. Use touch-typing strategies to reach a minimum of 25 words per minute with accuracy (e.g., meets school-identified standard for accuracy)

  PO 2. Retrieve and save information remotely (e.g., network servers, Internet, Intranet, peripheral devices)

  PO 3. Demonstrate functional operation of technology devices (e.g., presentation devices, digital cameras, scanners, document cameras, scientific probes) (*See Technology 3T-E2, PO1)*

STANDARD 1: FUNDAMENTAL OPERATIONS AND CONCEPTS (continued)

Students understand the operations and function of technology systems and are proficient in the use of technology.

ESSENTIALS (Grades 4-8)

- **1T-E3. When a system is not working properly, demonstrate an understanding of hardware, software and connectivity problem solving processes**

  See: Science (1SC-E1)

  PO 1. Use troubleshooting strategies to solve applications problems (e.g., file management strategies, online help strategies, documentation, collaboration with others)

  PO 2. Use troubleshooting strategies to solve basic hardware problems (e.g., use online help, use documentation, collaboration with others)

  PO 3. Use troubleshooting strategies to identify basic connectivity problems (e.g., use online help, use documentation, collaboration with others)

STANDARD 2: SOCIAL, ETHICAL AND HUMAN ISSUES

Students understand the social, ethical and human issues related to using technology in their daily lives and demonstrate responsible use of technology systems, information and software.

ESSENTIALS (Grades 4-8)

- **2T-E1. Discuss basic issues related to responsible use of technology and information and describe personal conesquences of inappropriate use**

  See: Comprehensive Health (4CH-E3), Science (2SC-E2) and Social Studies (2SS-E2, PO1, 2SS-E5, PO1, 2SS-E7, PO1)

  PO 1. Explain the purpose of an Acceptable Use Agreement/ Policy and the consequences of inappropriate use

  PO 2. Describe and practice safe Internet/Intranet usage (e.g., do not post inappropriate or harmful material; do not reveal personal information; follow district Acceptable Use Policy)

  PO 3. Describe and practice "netiquette" when using the Internet and electronic mail (e.g., publish photographs of people only with their permission)

STANDARD 2: SOCIAL, ETHICAL AND HUMAN ISSUES (continued)

Students understand the social, ethical and human issues related to using technology in their daily lives and demonstrate responsible use of technology systems, information and software.

ESSENTIALS (Grades 4-8)

- **2T-E2. Exhibit legal and ethical behaviors when using technology and information and discuss consequences of misuse**

  PO 1. Follow the rules for deciding when permission is needed for using the work of others, (e.g., some sites specify whether permission is required or not, some work is in public domain)

  PO 2. Obtain permission to use the work of others (*See Technology 5T-E2, PO3)*

  PO 3. Provide complete citations from electronic media (e.g., use age-level appropriate, district developed standardized reference formats for citing source of information) (*See Technology 5T-E2, PO5)*

  PO 4. Explain copyright laws and "fair use" guidelines (e.g., in relationship to print, video, computer software, multimedia project, music)

  PO 5. Describe copyright guidelines for multimedia creation and Internet development

STANDARD 2: SOCIAL, ETHICAL AND HUMAN ISSUES (continued)

Students understand the social, ethical and human issues related to using technology in their daily lives and demonstrate responsible use of technology systems, information and software.

ESSENTIALS (Grades 4-8)

- **2T-E2. Exhibit legal and ethical behaviors when using technology and information and discuss consequences of misuse**

  PO 6. State personal consequences (e.g., fines, loss of privileges, grade reduction, academic probation) related to violations of:

  a) Copyright (e.g., sheet sheet music, prerecorded music, print, video, images)

  b) Password security

  c) Privacy (e.g., student files on a network, floppy disk and hard drive)

  d) Internet usage (e.g., inappropriate postings, accessing inappropriate material)

  PO 7. Discuss the negative impact of unauthorized intrusions into networked data and describe actions to prevent these intrusions

STANDARD 2: SOCIAL, ETHICAL AND HUMAN ISSUES (continued)

Students understand the social, ethical and human issues related to using technology in their daily lives and demonstrate responsible use of technology systems, information and software.

ESSENTIALS (Grades 4-8)

- **2T-E3. Demonstrate knowledge of current changes in technologies and the effect those changes have on the workplace and society**

  See:Comprehensive Health (4CH-E2) and Social Studies (3SS-E6, PO8, 3SS-E7, PO5)

  PO 1. Compare information technologies from past to present and describe the implications of computer power doubling every 18 months (Moore's Law) (e.g., size, speed, cost)

  PO 2. Describe the impact of technology use on individuals at home and in the workplace (e.g., computer has replaced the TV for some individuals; free time is spent using technology versus outdoor activities; jobs have been created and/or eliminated due to technological advances; possible infringement of privacy)

  PO 3. Discuss the social implications of the "digital divide" (e.g., homes and schools with much technology and connectivity versus those with less or none)

STANDARD 3: TECHNOLOGY PRODUCTIVITY TOOLS

Students use technology tools to enhance learning, to increase productivity and creativity and to construct technology-enhanced models, prepare publications and produce other creative works.

ESSENTIALS (Grades 4-8)

- **3T-E1. Use formatting capabilities of technology tools for communicating and illustrating**

  See: Language Arts (W-F1, PO5)

  PO 1. Use word processing editing tools to revise a document (e.g., cut and paste, tabs and margins, font size, font style, delete and undo, selecting, spell check, click and drag)

  PO 2. Design a word processing document with graphical elements (e.g., clip art, digital photographs, symbols, using text wrap, cropping, sizing, drawing tools)

- **3T-E2. Use a variety of technology tools for data collection and analysis**

  See: Mathematics (5M-E6) and Social Studies (1SS-E8, PO1)

  PO 1. Use technology device(s) to collect and record data (e.g., science probe, graphing calculator, PDA {personal digital assistant}, alternative keyboards, webcams, GPS and Internet)

STANDARD 3: TECHNOLOGY PRODUCTIVITY TOOLS (continued)

Students use technology tools to enhance learning, to increase productivity and creativity and to construct technology-enhanced models, prepare publications and produce other creative works.

ESSENTIALS (Grades 4-8)

- **3T-E2. Use a variety of technology tools for data collection and analysis**

  PO 2. Create and use a spreadsheet to analyze data (e.g., use formulas, create charts and graphs)

  PO 3. Create a database with multiple fields to manipulate data in a variety of ways (e.g., sort, merge, list and report)

- **3T-E3. Publish and present information using technology tools**

  See: Science (1SC-E3, PO2 gr. 4-5, or PO1, gr. 6-8)

  PO 1. Design and create a multimedia presentation or Web page using multiple digital sources (e.g., from camera, video, scanner, CD-ROM, Internet)

  PO 2. Publish or present the above production (*See Technology 4T-E2, PO1 or 4T-E3)*

STANDARD 3: TECHNOLOGY PRODUCTIVITY TOOLS (continued)

Students use technology tools to enhance learning, to increase productivity and creativity and to construct technology-enhanced models, prepare publications and produce other creative works.

ESSENTIALS (Grades 4-8)

- **3T-E4. Use technology tools to support system analysis and modeling**

  See: Mathematics (2M-E5,6M-E1), Science (1SC-E2, E5) and Workplace Skills (6WP-E1)

  PO 1. Manipulate several variables in a computer simulation to reach a desired outcome (e.g., simulation software, Web-based simulation, textbook support software)

STANDARD 4: TECHNOLOGY COMMUNICATIONS TOOLS

Building on productivity tools, students will collaborate, publish, and interact with peers, experts and other audiences using telecommunications and media.

ESSENTIALS (Grades 4-8)

- **4T-E1. Use telecommunications efficiently and effectively to access remote information and communicate with others in support of facilitated and independent learning**

  See: Language Arts (W-E3-E6)

  PO 1. Communicate independently via e-mail, Internet, and/or videoconference with people in a remote location *(For Internet safety see Technology 2T-E1)*

- **4T-E2. Use technology tools for individual and collaborative writing, communication and publishing activities to create curricular related products for audiences inside and outside the classroom**

  See:Language Arts (W-E2-E7, LS-E)

  PO 1. Plan, design and present an academic product using technology tools (e.g., multimedia authoring, presentation software, digital cameras, scanners, projection devices)

STANDARD 4: TECHNOLOGY COMMUNICATIONS TOOLS
(continued)

Building on productivity tools, students will collaborate, publish, and interact with peers, experts and other audiences using telecommunications and media.

ESSENTIALS (Grades 4-8)

- **4T-E3. Collaboratively use telecommunications and online resources***) (For Internet safety issues see Technology 2T-E1)*

  See: Arts {Theatre} (2AT-E1) and Social Studies (1SS-E8, PO2, grades 6-8)

  PO 1. Request collaborative exchanges among people in local and/or remote locations (e.g., e-mail, online discussions, Web environments)

  PO 2. Communicate electronically to collaborate with experts, peers and others to analyze data and/or develop an academic product (e.g., e-mail, discussion group, videoconferencing)

  PO 3. Present an academic product to share data and/or solutions (e.g., Web site, multimedia presentation, video)

STANDARD 5: TECHNOLOGY RESEARCH TOOLS

Students utilize technology-based research tools to locate and collect information pertinent to the task, as well as evaluate and analyze information from a variety of sources.

ESSENTIALS (Grades 4-8)

- **5T-E1. Locate information from electronic resources**

  See:Arts {Theatre} (2AT-E4), Language Arts (W-E8) and Mathematics (2M-E1, PO1)

  PO 1. Identify electronic research resources

  PO 2. Define subject searching and devise a search strategy to locate information using available electronic research resources (i.e., electronic card catalog, online or CD-ROM reference sources, grade level appropriate Internet resources)

  PO 3. Explain the difference between subject and keyword searching

  PO 4. Construct keyword searches including basic Boolean logic using available electronic research resources (i.e., electronic card catalog, online or CD-ROM reference sources and grade level appropriate Internet resources)

  PO 5. Identify the author, copyright date and publisher of information located in electronic resources, including Internet resources

STANDARD 5: TECHNOLOGY RESEARCH TOOLS (continued)

Students utilize technology-based research tools to locate and collect information pertinent to the task, as well as evaluate and analyze information from a variety of sources.

ESSENTIALS (Grades 4-8)

- **5T-E2. Evaluate the accuracy, relevance, appropriateness, comprehensiveness and bias of electronic information sources**

  See: Social Studies (1SS-E1, PO2 and 1SS-E8, PO5-6)

  PO 1. Create citations for electronic research sources following a prescribed format (*See Technology 2T-E2,PO2)*

  PO 2. Gather research from a variety of electronic sources and identify the most appropriate information for answering the research question (*See Technology 5T-D2, PO2)*

  PO 3. Obtain permission, when appropriate, to use the work of others (*See Technology 2T-E2, PO3)*

  PO 4. Identify the components of a URL to determine the source of the information

  PO 5. Identify the author of the information found from electronic resources and determine whether the author is an authority, displays bias and is a primary or secondary source

STANDARD 6:TECHNOLOGY AS A TOOL FOR PROBLEM SOLVING AND DECISION-MAKING

Students use technology to make and support decisions in the process of solving real-world problems.

ESSENTIALS (Grades 4-8)

- **6T-E1. Determine when technology is useful and select and use the appropriate tools and technology resources to solve problems**

  PO 1. Based on a problem selected by the student, identify and use appropriate technology tools to:

  a) collect data (e.g., counting versus using a probe, book index versus online index)

  b) interpret data (e.g., use of a spreadsheet instead of a graphic organizer)

  c) develop a solution to the problem (e.g., creating a model vs. using a spreadsheet)

  d) present findings (e.g., create a poster versus an electronic presentation)

STANDARD 1: FUNDAMENTAL OPERATIONS AND CONCEPTS

Students understand the operations and function of technology systems and are proficient in the use of technology.

PROFICIENCY (Grades 9-12)

- **1T-P1. Use the appropriate technology device to complete a task**

  See: Mathematics (3M-P1 and P3, 4M-P2)

  PO 1. Given a task, select the appropriate technology device (e.g., reporting a news story using digital and video camera and online editing to publish on the Web; gathering data using scientific probes and graphing calculators)

- **1T-P2. Make informed choices among technology systems, resources and services**

  See: Arts {Music} (1AM-P10) and Language Arts (VP-P)

  PO 1. Create criteria to compare and contrast technology systems, resources and services (e.g., which Internet service provider, music system, Web browser or graphics package meets criteria)

STANDARD 2: SOCIAL, ETHICAL AND HUMAN ISSUES

Students understand the social, ethical and human issues related to using technology in their daily lives and demonstrate responsible use of technology systems, information and software.

PROFICIENCY (Grades 9–12)

- **2T-P1. Identify capabilities and limitations of contemporary and emerging technology resources and assess the potential of these systems and services**

  See: Arts {Music} (2AM-P3) and Social Studies (1SS-P1, PO2),

  PO 1. Make informed choices among technology systems, resources and services in a variety of contexts

  PO 2. Explain the impact computer networking has on an organization (e.g., cost, allocation of resources, security, productivity, communications, and organizational or societal change)

  PO 3. Predict future technological advances and the impact of them for individuals and the workplace (e.g., given the current "instant access," what's next?)

STANDARD 2: SOCIAL, ETHICAL AND HUMAN ISSUES (continued)

Students understand the social, ethical and human issues related to using technology in their daily lives and demonstrate responsible use of technology systems, information and software.

PROFICIENCY (Grades 9–12)

- **2T-P2. Analyze advantages and disadvantages of widespread use and reliance on technology in the workplace and in society as a whole**

  See: Comprehensive Health (4CH-P2), Science (3SC-P3), Social Studies (1SS-P1, PO1-2), Workplace Skills (7WP-P2)

  PO 1. Explain the cost of maintaining technology in terms of money and manpower

  PO 2. Describe the effect on an organization when technology fails (e.g., power outage)

  PO 3. Analyze the long-term impact of technologies and their obsolescence (e.g., on the preservation of, and access to, older technologies; responsible disposal of old technologies; retraining of workforce)

STANDARD 2: SOCIAL, ETHICAL AND HUMAN ISSUES (continued)

Students understand the social, ethical and human issues related to using technology in their daily lives and demonstrate responsible use of technology systems, information and software.

PROFICIENCY (Grades 9–12)

- **2T-P3. Demonstrate legal and ethical behaviors among peers, family, and community regarding the use of technology and information**

  See: Social Studies (2SS-P8, PO2 and PO4-6)

  PO 1. State personal liability issues related to security systems to protect technologies (e.g., use of passwords and the importance of protecting them; use of encryption software)

  PO 2. Discuss individual privacy issues versus First Amendment protection (e.g., federal and state filtering and access legislation)

  PO 3. Explain the impact of unauthorized intrusions (i.e., hacking, spamming, manipulating or deleting data) on society

  PO 4. Describe computer viruses and ways to protect computers from them

STANDARD 3: TECHNOLOGY PRODUCTIVITY TOOLS

Students use technology tools to enhance learning, to increase productivity and creativity and to construct technology-enhanced models, prepare publications and produce other creative works.

PROFICIENCY (Grades 9-12)

- **3T-P1. Communicate to a variety of audiences using professional level technology tools**

  See: Mathematics (2M-P2), Science (5SC-P3-4) and Social Studies (4SS-P2, PO1-2)

  PO 1. Create documents using professional format (e.g., a résumé, letter of application, electronic portfolio, research paper)

  PO 2. Merge information from one document to another (e.g., mail merge, publish and subscribe)

  PO 3. Create a document that utilizes hyperlinks (e.g., Web link in documents, linking a word to a glossary, creating an interactive index)

STANDARD 3: TECHNOLOGY PRODUCTIVITY TOOLS (continued)

Students use technology tools to enhance learning, to increase productivity and creativity and to construct technology-enhanced models, prepare publications and produce other creative works.

PROFICIENCY (Grades 9-12)

- **3T-P2. Use a variety of technology tools for data collection and analysis to support a decision**

  See:Arts {Theatre}(1AT-P6), Mathematics (2M-P2, 3M-P3) and Social Studies (1SS-P1, PO2)

  PO 1. Select appropriate technology devices to collect and record data (e.g., science probe, graphing calculator, PDA {personal digital assistant}, alternative keyboard, webcam, GPS and Internet)

  PO 2. Create and use a spreadsheet to analyze variables (e.g., 12-month budget, loan rates, science and math experiments, and investment portfolios)

  PO 3. Analyze data and create a database report from information manipulated in a variety of ways to support decisions (e.g., census data, polls and surveys, annual report)

STANDARD 3: TECHNOLOGY PRODUCTIVITY TOOLS
(continued)

Students use technology tools to enhance learning, to increase productivity and creativity and to construct technology-enhanced models, prepare publications and produce other creative works.

PROFICIENCY (Grades 9-12)

- **3T-P3. Use technology tools to publish and present information with interactive features**

  See: Mathematics (2M-P7, 4M-P2) and Science (5SC-P2 and P6, 6SC-P1)

  PO 1. Design and create a multimedia presentation or Web site with interactive features (e.g., animation, sound, action buttons to play, video, control devices, open other applications, link to a Web site)

- **3T-P4. Use technology tools to support modeling and system analysis**

  See: Science (3SC-P2) and Workplace Skills (6WP-P3)

  PO 1. Manipulate several variables in a computer simulation to reach a desired outcome (e.g., simulation software, Web-based simulation, textbook support software)

STANDARD 4: TECHNOLOGY COMMUNICATIONS TOOLS

Building on productivity tools, students will collaborate, publish, and interact with peers, experts and other audiences using telecommunications and media.

PROFICIENCY (Grades 9-12)

- **4T-P1. Routinely and efficiently use online information resources to meet needs for collaboration and communications**

  See: Language Arts (W-P2-6) and Workplace Skills (1WP-P5)

  PO 1. Using criteria for research in Standard 5, create an end product (e.g., multimedia presentation, publication, Web page) to disseminate the information

- **4T-P2. Manage and communicate personal and professional information utilizing technology tools and resources**

  See: Language Arts (W-P2-6) and Workplace Skills (7WP-P1, 1WP-P3)

  PO 1. Plan and present a product appropriate to the task

STANDARD 4: TECHNOLOGY COMMUNICATIONS TOOLS
(continued)

Building on productivity tools, students will collaborate, publish, and interact with peers, experts and other audiences using telecommunications and media.

PROFICIENCY (Grades 9-12)

- **4T-P3. Using technology, collaborate with peers, experts, and others to contribute to a content-related knowledge base**

  See: Workplace Skills (1WP-P3-6 and P9, 4WP-P1)

  PO 1. Contribute digitized material (e.g., video interviews, scanned pictures, text, and graphic information) to a project archive and create links to resource material

  PO 2. Conduct e-mail interviews with content experts

  PO 3. Consider several methods and choose the best for building group collaboration in research, communication and presentation among students in physically separated schools

STANDARD 5: TECHNOLOGY RESEARCH TOOLS

Students utilize technology-based research tools to locate and collect information pertinent to the task as well as evaluate and analyze information from a variety of sources.

PROFICIENCY (Grades 9-12)

- **5T-P1. Develop a research strategy to find accurate, relevant, appropriate electronic information sources**

  See: Arts {Theatre} (2AT-P1), Language Arts (W-P4), Mathematics (2M-E1, PO 1), Social Studies (1SS-P2, PO1 and PO3) and Workplace Skills (7WP-P1)

  PO 1. Explain the difference between Internet searching using directories and search engines

  PO 2. Construct online or electronic database searches using Boolean logic (AND, OR, NOT)

  PO 3. Independently select appropriate electronic resources from school, community and the world (via online) to be used to locate information needed when presented with a problem to solve

  PO 4. Evaluate the appropriateness and effectiveness of electronic resources (e.g., purpose, credibility of author)

STANDARD 5: TECHNOLOGY RESEARCH TOOLS *(continued)*

Students utilize technology-based research tools to locate and collect information pertinent to the task as well as evaluate and analyze information from a variety of sources.

PROFICIENCY (Grades 9-12)

- **5T-P2. Investigate and apply expert systems (e.g., search engines and intelligent agents)**

  See: Arts {Theatre} (2AT-P1) and Workplace Skills (1WP-P9, P10)

  PO 1. Given a concept, use online search engines as well as resource-specific search features (e.g., CD-ROMs) to find relevant information

  PO 2. Adapt software for personal efficiency by setting preferences for effective use of the software

  PO 3. Use advanced features (e.g., preferences, advanced searching, filtering) in Internet browser and information software

- **5T-P3. Present research findings from electronic resources using academic models for citations and format**

  See: Workplace Skills (1WP-P10, 2WP-P2)

  PO 1. Utilize evaluation criteria (authority, accuracy, relevancy, timeliness) for information found on the Internet to present research findings

  PO 2. Create citations for resources used following an academic model to present research findings

STANDARD 6: TECHNOLOGY AS A TOOL FOR PROBLEM SOLVING AND DECISION-MAKING

Students use technology to make and support decisions in the process of solving real-world problems.

PROFICIENCY (Grades 9-12)

- **6T-P1. Investigate technology-based options, including distance and distributed education for lifelong learning**

  See: Workplace Skills (1WP-P9)

  PO 1. Locate and use an online tutorial and discuss the benefits and disadvantages of this method of learning

  PO 2. Research a career and predict the advanced training needed to maintain success in the career

  PO 3. Design and implement a personal learning plan that utilizes technology (e.g., identify a topic such as an academic interest, personal hobby, health issue, or potential job sources, and utilize research skills from Standard 5 to support lifelong learning)

STANDARD 6: TECHNOLOGY AS A TOOL FOR PROBLEM SOLVING AND DECISION-MAKING
(continued)

Students use technology to make and support decisions in the process of solving real-world problems.

PROFICIENCY (Grades 9-12)

- **6T-P2. Routinely and ethically use productivity tools, communication tools and research skills to solve a problem**

  See: Mathematics (2M-P7-8)

  PO 1. As a capstone experience in a content area, solve a problem using appropriate technology tools to:

  a) identify the problem and formulate the strategy to solve the problem (e.g., brainstorming tools, flowcharting, online resources)

  b) collect data (e.g., using GPS, PDA {personal digital assistant}, Internet, probeware, recordings)

  c) interpret data (e.g., visualization, simulation, or modeling software)

  d) develop a solution to the problem

  e) present findings (e.g., electronic presentation, Web page, professionally formatted document, computer model, audio or video presentation, Web streaming)

STANDARD 1: FUNDAMENTAL OPERATIONS AND CONCEPTS

Students understand the operations and function of technology systems and are proficient in the use of technology.

DISTINCTION (Honors)

- **1T-D1. Manage a complex technology system such as a local area network, video distribution of a school, or lighting for a production**

  See: Arts {Theatre} (1AT-D4, D8-9)

- **IT-D2. Set up and manage a homework hotline, tutoring site, discussion group, threaded discussion and/or e-mail system for students and parents**

STANDARD 2: SOCIAL, ETHICAL AND HUMAN ISSUES

Students understand the social, ethical and human issues related to using technology in their daily lives and demonstrate responsible use of technology systems, information and software.

DISTINCTION (Honors)

- **2T-D1. Analyze current changes in technologies and predict the effect those changes have on the workplace and society**

  See: Comprehensive Health (4CH-D1) and Science (3SC-D1)

- **2T-D2. Advocate for legal and ethical behaviors among peers, family, and community regarding the use of technology and information**

  See: Comprehensive Health (4CH-D1, 5CH-D1) and Science (4SC-D1 and D2)

STANDARD 3: TECHNOLOGY PRODUCTIVITY TOOLS

Students use technology tools to enhance learning, to increase productivity and creativity and to construct technology-enhanced models, prepare publications and produce other creative works.

DISTINCTION (Honors)

- **3T-D1. Demonstrate technical standards, practices and techniques in videography by creating a product**

  See: Arts {Theatre} (1AT-D4-6)

STANDARD 4: TECHNOLOGY COMMUNICATIONS TOOLS

Building on productivity tools, students will collaborate, publish, and interact with peers, experts and other audiences using telecommunications and media.

DISTINCTION (Honors)

- **4T-D1. Use technology to compile, synthesize, produce, and disseminate information, models, and other creative works**

  See: Language Arts (LS-D) and Workplace Skills (1WP-D4)

- **4T-D2. Participate in a student think-tank simulation to solve a technology-based problem**

  See: Workplace Skills (1WP-D5, 4WP-D1)

STANDARD 5: TECHNOLOGY RESEARCH TOOLS

Students utilize technology-based research tools to locate and collect information pertinent to the task, as well as evaluate and analyze information from a variety of sources.

DISTINCTION (Honors)

- **5T-D1. Design a research project using a variety of technologies to solve a real-world problem**

  See: Language Arts (W-D1)

- **5T-D2. Evaluate the accuracy, relevance, appropriateness, comprehensiveness and bias of electronic information sources**

  See: Arts {Theatre} (2AT-D2)

  PO 1. Compare and contrast bias in electronic information resources

  PO 2. Create a presentation on bias found in electronic information resources to present to a younger audience (*See Technology 5T-E2, PO4)*

STANDARD 6: TECHNOLOGY AS A TOOL FOR PROBLEM SOLVING AND DECISION-MAKING

Students use technology to make and support decisions in the process of solving real-world problems.

DISTINCTION (Honors)

- **6T-D1. Collaborate with peers, experts and others to compile, synthesize, produce and disseminate information and models for the purpose of suggesting solutions to a complex problem**

  See: Science (1SC-D1)